Open Source Summit North America 2024

Secure Consumption of Open Source Software: Evaluating, Utilizing, and Contributing Safely

Katherine Druckman
Open Source Security Evangelist

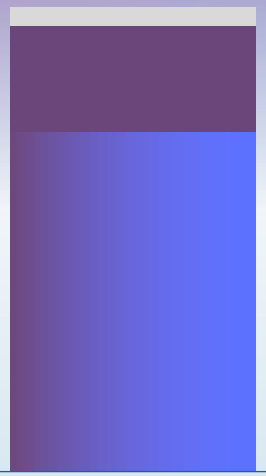
Security challenges

Why is open source security so challenging?

Open source is *everywhere*

96%

of codebases



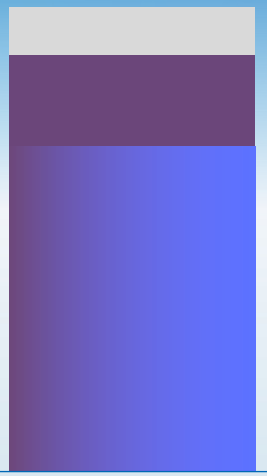
77%

of code within

Source: Synopsis

70–90%

of all software



Source: Linux Foundation

https://www.synopsys.com/software-integrity/resources/analyst-reports/open-source-security-risk-analysis.html

https://www.linuxfoundation.org/blog/blog/a-summary-of-census-ii-open-source-software-application-libraries-the-world-depends-on

Open source is *everywhere*

CVEs per year

So many dependencies

- Secondary and tertiary dependencies can get well into the 100s...
- Especially with web applications

Evaluating projects

What does it mean to consume open source software securely?

Evaluating open source projects

1. Review basic health—Is it active?
2. Check governance—Is it defined?
3. Review maintenance & releases—Is there a cadence?
4. Explore the community—Are people engaged?
5. Bug reporting—Is there a documented process?

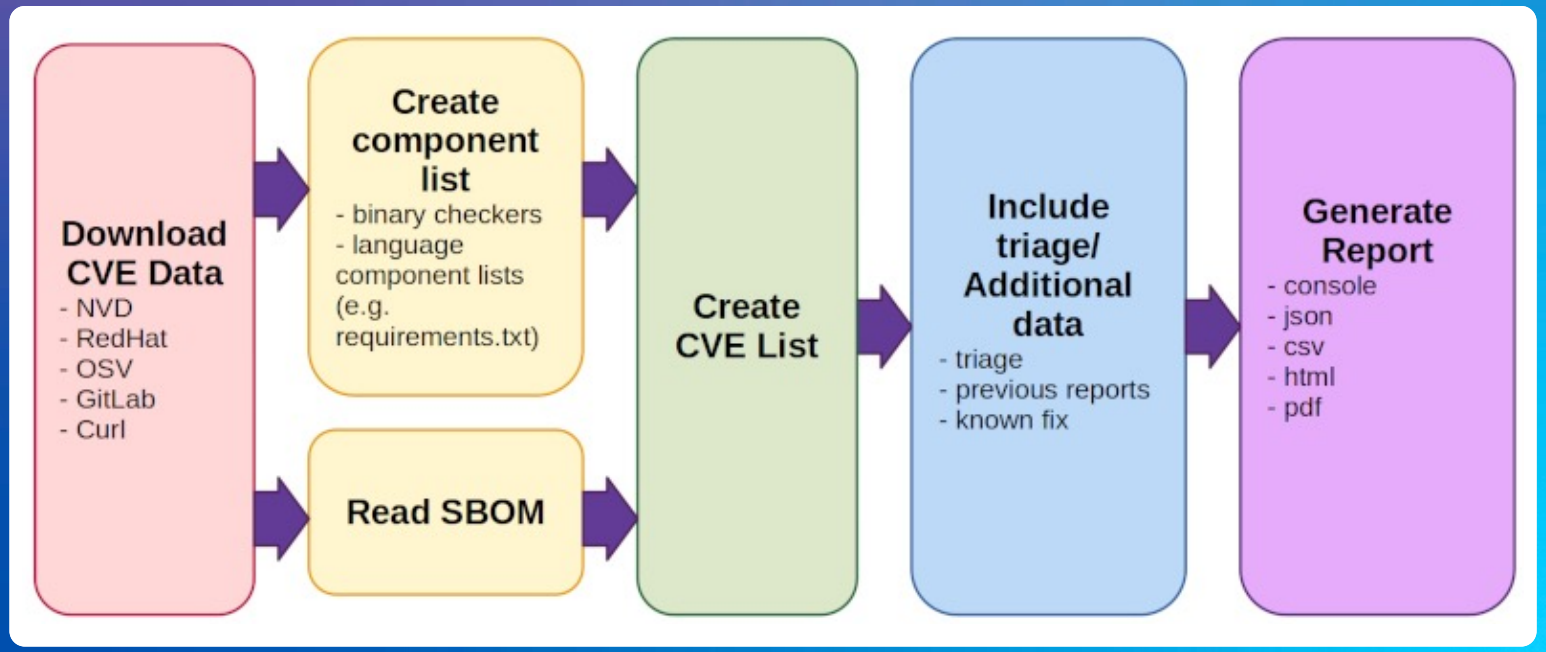
Tools for securing open source software

Beyond basic health

CVE-bin-tool

The CVE Binary Tool can help you find known vulnerabilities in software by using data from the National Vulnerability Database (NVD) list of Common Vulnerabilities and Exposures (CVEs) as well as known vulnerability data from Redhat, Open Source Vulnerability Database (OSV), Gitlab Advisory Database (GAD), and Curl.

1. A binary scanner—Helps you determine which packages may have been included as part of a piece of software.
2. Tools for scanning known component lists—Such as CSV files, SBOM formats, etc.



As simple as ...

```
pip install cve-bin-tool
cve-bin-tool <directory/file>
```

OpenSSF Best Practices Badge

README LGPL-3.0 license Security

Gramine Library OS with Intel SGX Support

docs passing openssf best practices passing

A Linux-compatible Library for Multi-Process Applications

What is Gramine?

Gramine (formerly called *Graphen* a lightweight library OS, designed to run a singl host requirements. Gramine can run cations in an isolated environment with benef a complete OS in a virtual machine -- luding guest customization, ease of porting to process migration.

Gramine supports native, unmodified Linux binaries on any platform. Currently, Gramin SGX enclaves on Linux platforms.

In untrusted cloud and edge deployments, there is a strong desire to shield the whole infrastructure. Gramine supports this "lift and shift" paradigm for bringing unmodified Confidential Computing with Intel SGX. Gramine can protect applications from a malici minimal porting effort.

OpenSSF Best Practices 100%

CORE INFRASTRUCTURE INITIATIVE BEST PRACTICES

LibreOffice

Projects that follow the best practices below can voluntarily self-certify they've achieved an Open Source Security Foundation (OpenSSF) best Show details

If this is your project, please show your badge status on your project page! The like this: openssf best practices passing Here is how to embed it: Show details

These are the passing criteria. You can also view the silver or gold level

Expand panels Show all details Show only incomplete c

Basics

Identification

What is the human-readable name of the project? Show details

LibreOffice

OpenSSF Scorecard

- What is it?
  - Quick, easy project assessment via list of automated checks for best practices
- What does it help protect me from?
  - Malicious maintainers and packages
  - Poorly maintained projects
  - Compromised build systems and/or code
- How do I use it?
  - Command line interface (CLI)
  - GitHub Action

README | Code of conduct | Apache-2.0 license | Security

OpenSSF Scorecard

openssf scorecard 9.6 | openssf best practices passing | build passing | CodeQL passing | reference | go report A+
codecov 75% | SLSA level 3 | slack openssf/scorecard

Overview

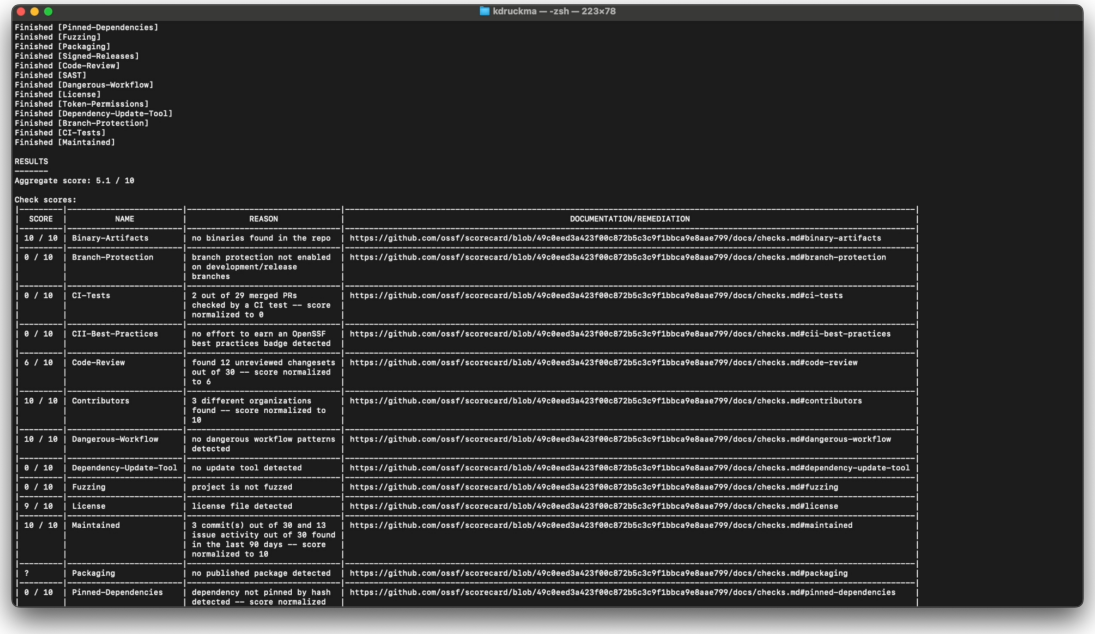
- What Is Scorecard?
- Prominent Scorecard Users
- View a Project's Score
- Scorecard's Public Data

Using Scorecard

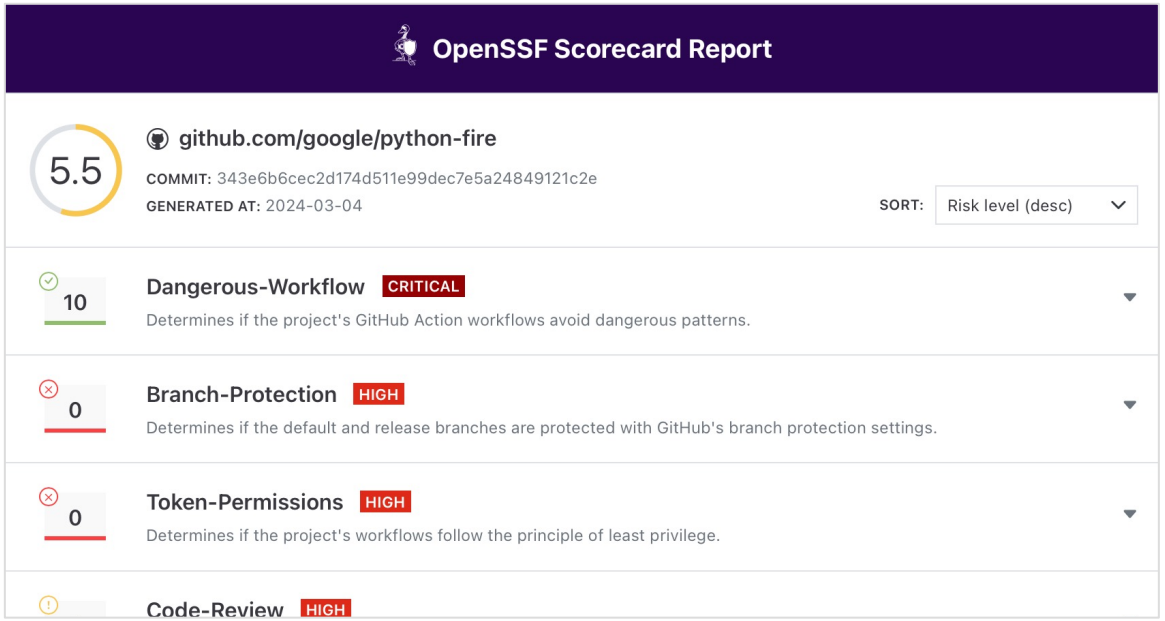
- Scorecard GitHub Action
- Scorecard REST API
- Scorecard Badges
- Scorecard Command Line Interface
  - Prerequisites
  - Installation
  - Authentication
  - Basic Usage

OpenSSF Scorecard

Score in terminal …



… or via browser



Putting the tools to work

Let’s evaluate some software

Looks promising!

Python Fire

python 2.7 | 3.5 | 3.6 | 3.7 | 3.8 | 3.9

Python Fire is a library for automatically generating command line interfaces (CLIs) from absolutely any Python object.

- Python Fire is a simple way to create a CLI in Python. [1]
- Python Fire is a helpful tool for developing and debugging Python code. [2]
- Python Fire helps with exploring existing code or turning other people's code into a CLI. [3]
- Python Fire makes transitioning between Bash and Python easier. [4]
- Python Fire makes using a Python REPL easier by setting up the REPL with the modules and variables you'll need already imported and created. [5]

Installation

To install Python Fire with pip, run: `pip install fire`

To install Python Fire with conda, run: `conda install fire -c conda-forge`

To install Python Fire from source, first clone the repository and then run: `python setup.py install`

Used by 28k

Contributors 62

+ 48 contributors

Languages

Python 100.0%

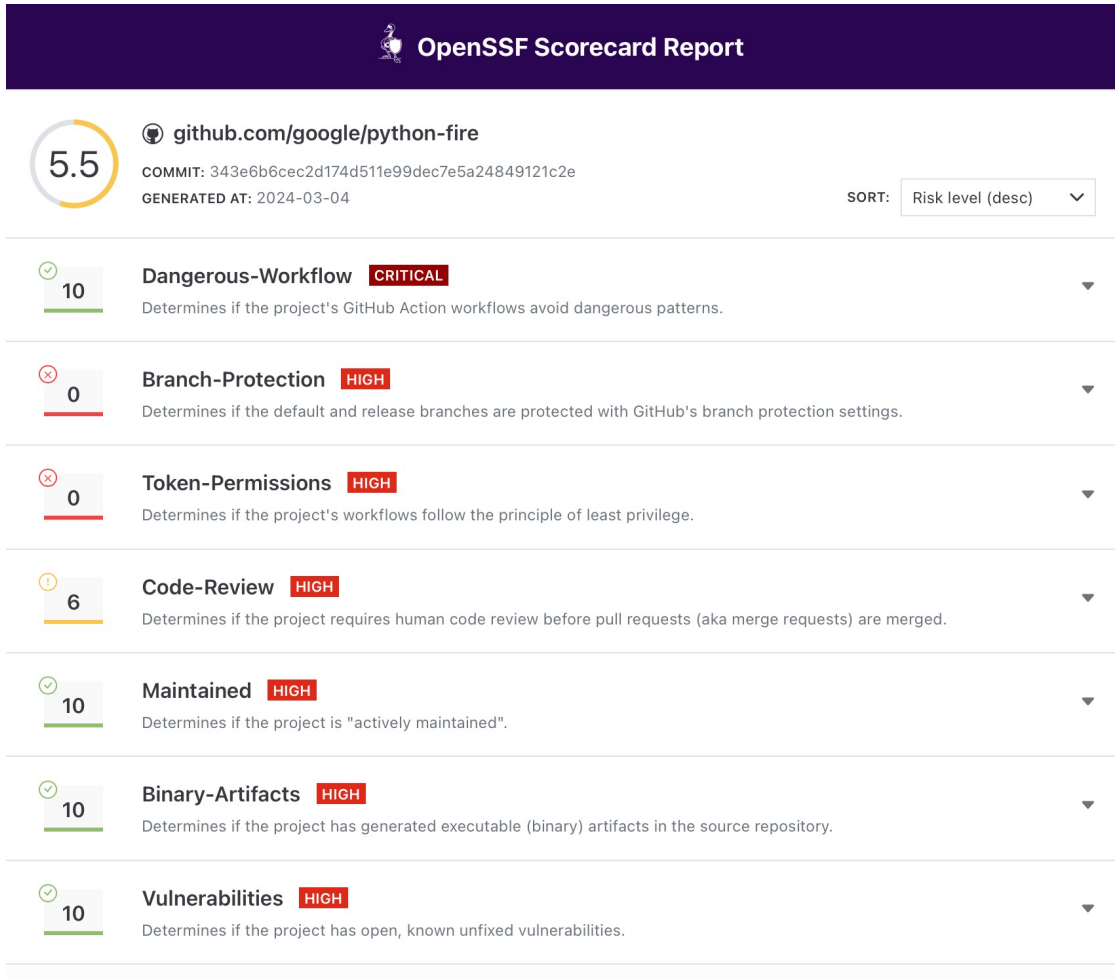
OpenSSF Scorecard: Manual CLI scan—Terminal

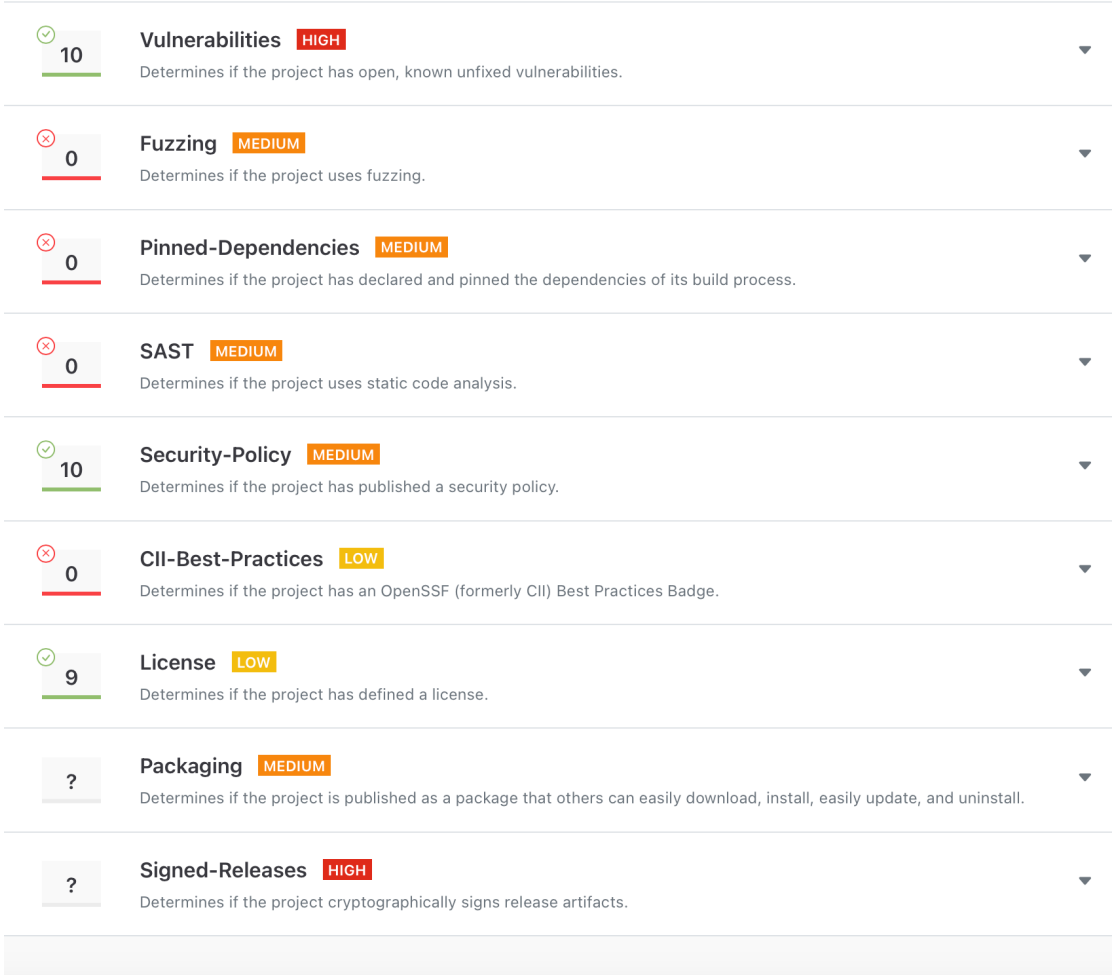
```
scorecard --repo github.com/google/python-fire
```

```
Finished [Pinned-Dependencies]
Finished [Fuzzing]
Finished [Packaging]
Finished [Signed-Releases]
Finished [Code-Review]
Finished [SAST]
Finished [Dangerous-Workflow]
Finished [License]
Finished [Token-Permissions]
Finished [Dependency-Update-Tool]
Finished [Branch-Protection]
Finished [CI-Tests]
Finished [Maintained]

RESULTS
-------
Aggregate score: 5.1 / 10

Check scores:
```

SCORE	NAME	REASON	DOCUMENTATION/REMEDIATION
10 / 10	Binary-Artifacts	no binaries found in the repo	https://github.com/ossf/scorecard/blob/49c0eed3a423f00c872b5c3c9f1bbca9e8aae799/docs/checks.md#binary-artifacts
0 / 10	Branch-Protection	branch protection not enabled on development/release branches	https://github.com/ossf/scorecard/blob/49c0eed3a423f00c872b5c3c9f1bbca9e8aae799/docs/checks.md#branch-protection
0 / 10	CI-Tests	2 out of 29 merged PRs checked by a CI test -- score normalized to 0	https://github.com/ossf/scorecard/blob/49c0eed3a423f00c872b5c3c9f1bbca9e8aae799/docs/checks.md#ci-tests
0 / 10	CII-Best-Practices	no effort to earn an OpenSSF best practices badge detected	https://github.com/ossf/scorecard/blob/49c0eed3a423f00c872b5c3c9f1bbca9e8aae799/docs/checks.md#cii-best-practices
6 / 10	Code-Review	found 12 unreviewed changesets out of 30 -- score normalized to 6	https://github.com/ossf/scorecard/blob/49c0eed3a423f00c872b5c3c9f1bbca9e8aae799/docs/checks.md#code-review
10 / 10	Contributors	3 different organizations found -- score normalized to 10	https://github.com/ossf/scorecard/blob/49c0eed3a423f00c872b5c3c9f1bbca9e8aae799/docs/checks.md#contributors
10 / 10	Dangerous-Workflow	no dangerous workflow patterns detected	https://github.com/ossf/scorecard/blob/49c0eed3a423f00c872b5c3c9f1bbca9e8aae799/docs/checks.md#dangerous-workflow
0 / 10	Dependency-Update-Tool	no update tool detected	https://github.com/ossf/scorecard/blob/49c0eed3a423f00c872b5c3c9f1bbca9e8aae799/docs/checks.md#dependency-update-tool
0 / 10	Fuzzing	project is not fuzzed	https://github.com/ossf/scorecard/blob/49c0eed3a423f00c872b5c3c9f1bbca9e8aae799/docs/checks.md#fuzzing
9 / 10	License	license file detected	https://github.com/ossf/scorecard/blob/49c0eed3a423f00c872b5c3c9f1bbca9e8aae799/docs/checks.md#license
10 / 10	Maintained	3 commit(s) out of 30 and 13 issue activity out of 30 found in the last 90 days -- score normalized to 10	https://github.com/ossf/scorecard/blob/49c0eed3a423f00c872b5c3c9f1bbca9e8aae799/docs/checks.md#maintained
?	Packaging	no published package detected	https://github.com/ossf/scorecard/blob/49c0eed3a423f00c872b5c3c9f1bbca9e8aae799/docs/checks.md#packaging
0 / 10	Pinned-Dependencies	dependency not pinned by hash detected -- score normalized	https://github.com/ossf/scorecard/blob/49c0eed3a423f00c872b5c3c9f1bbca9e8aae799/docs/checks.md#pinned-dependencies

OpenSSF Scorecard: Browser





Taking ownership

Developers don’t owe you anything

Scan for tools, sources, and resources

Visit the presentation's GitHub page

- Intel and OpenSSF tools
- Guides and community resources
- Links to articles and source material
- A PDF of this presentation
- Social links

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